AMENDMENTS TO THE CLAIMS

Claims 1-21. (canceled)

Claim 22. (New): A semiconductor device, comprising:

a substrate;

a semiconductor well, formed in said substrate;

a plurality of floating diffusion regions, each having a different size and each in contact with said semiconductor well; and

a plurality of output transistors, each of said output transistors coupled to a respective one of said plurality of floating diffusion regions.

Claim 23. (New) The device of claim 22, wherein each of said plurality of floating diffusion regions is formed at a surface of the semiconductor well.

Claim 24. (New) The device of claim 22, further comprising:

an active oxide covering a surface of said semiconductor well.

Claim 25. (New) The device of claim 22, wherein each of said floating diffusion regions further is coupled to its own reset transistor, for controllably supplying a reset level in response to a reset signal.

Claim 26. (New) The device of claim 22, wherein said semiconductor substrate is of a first conductivity type and said semiconductor well is of a second conductivity type different from said first conductivity type.

Claim 27. (New) An image sensor, comprising:

a semiconductor substrate;

a first semiconductor well, formed within said semiconductor substrate;

a plurality of floating diffusion regions, each of a different size and each at least partially formed in said first semiconductor well;

a plurality of transistor connection elements, each enabling connection to a respective one of said plurality of floating diffusion regions, to obtain outputs indicative of an amount of light collected thereby; and

a photosensor, disposed on said semiconductor substrate, for supplying charged based upon light incident upon said photosensor to said floating diffusion regions.

Claim 28. (New) The sensor of claim 27, further comprising:

a plurality of reset elements, each respectively connected to reset a respective one of said plurality of floating diffusion regions.

Claim 29. (New) The sensor of claim 27, wherein said semiconductor substrate is P-type, said semiconductor well is N-type, and said plurality of floating diffusion regions include at least one N-type region and at least one P-type region.

Claim 30. (New) The sensor of claim 27, wherein at least one of said floating diffusion regions surround another one of said floating diffusion regions.

Claim 31. (New) The sensor of claim 27, wherein when said sensor is operational said semiconductor well is fully depleted.

Claim 32. (New) A method of converting light to a signal, comprising:

receiving light simultaneously in a plurality of floating diffusion regions, each having a different size, each having a conductivity type, and each producing an output indicative of a different gradation of the incoming light; and

sampling each of said floating diffusion regions using a transistor.

Claim 33. (New) The method of claim 32, wherein each said transistor used to sample a floating diffusion region has a same conductivity type as the floating diffusion region being sampled.